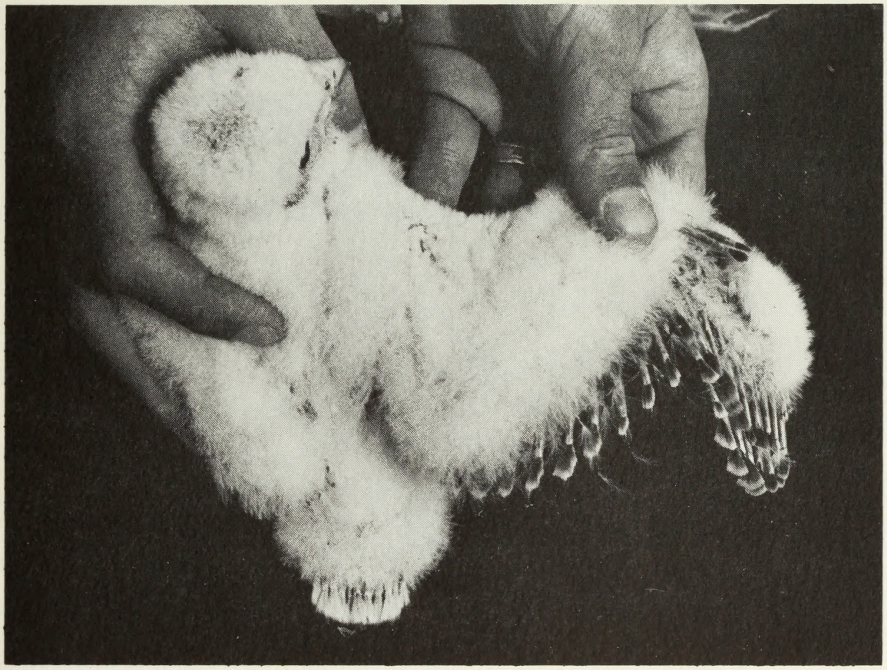
Photographic Guide For Aging Nestling PRAIRIE FALCONS

Marc Q. Moritsch, 1983



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SNAKE RIVER BIRDS OF PREY PROJECT
BOISE DISTRICT, IDAHO

ACKNOWLEDGMENTS

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INTRODUCTION

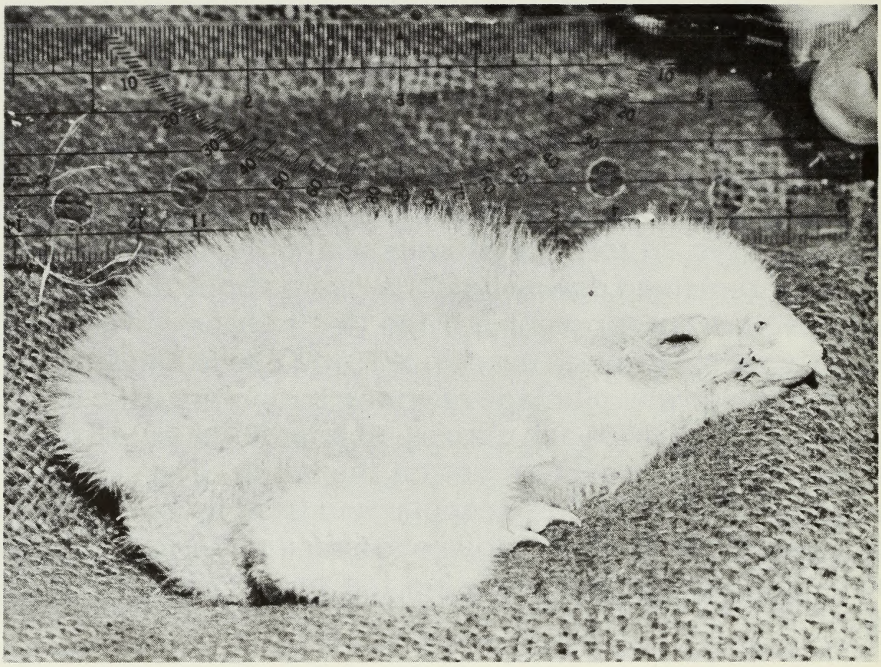
The ability to age nestlings is important in studies of growth, reproduction and nesting chronology. Estimates of hatching and laying times, important components for determining nest success (Mayfield 1961, 1975), can be derived if a bird's age is known. Accurate aging also is necessary for determining when to band young. Current methods for aging nestling raptors (Scharf and Balfour 1971, Petersen and Thompson 1977, Springer 1979) require that nests be entered and nestlings measured. This can be time consuming, expensive, and may reduce nesting success. An increase in nestling mortality may occur if young are disturbed at certain times of the brood rearing cycle (Fyfe and Olendorff 1976, Steenhof and Kochert 1982). A guide using photography to show morphological changes in nestlings during brood rearing will allow estimates of age to be made without climbing into the nest. This can be useful for several types of research and management work requiring chronological information on the ages of young birds.

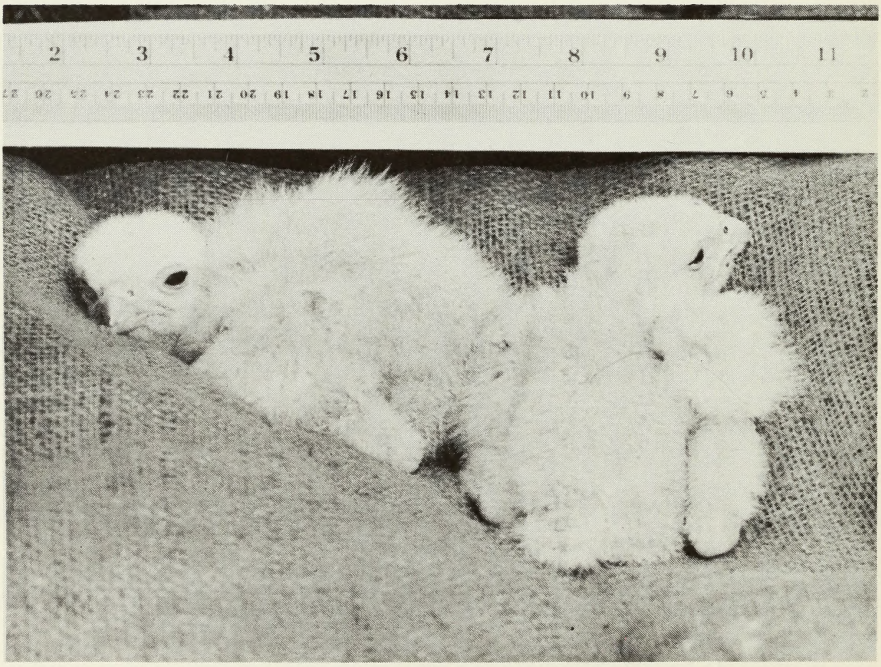
METHODS

During the 1982 nesting season in southwestern Idaho, I photographed two young from one prairie falcon (*Falco mexicanus*) nest. Approximate hatch date, to within three days, was determined by observing behavior of the adults and by visually inspecting the nest without entering it during incubation. The nest was visited at four-day intervals from the time the birds were one week of age until fledging. The young were removed from the nest at each visit, photographed, and returned to the nest. The nest was not entered before the chicks were one week old to reduce the chance of early nestling mortality. A plastic color leg band was placed on each bird for identification. Photographs of the head, wing, and dorsal body were taken with black and white and color film to allow identification of important characteristics. When possible, photographs of the body included a reference scale or a 10 cm grid.

RESULTS

With young prairie falcons it was possible to assign a unique series of characteristics at each visit or age class. The number and combinations of useful characteristics increased with age of the young until approximately 29-31 days. At this age juvenile feathering is almost complete. The nestlings remained downy until they were about 18 days old. Juvenile feathers were not apparent until the 17-19 day period although they may begin breaking through the skin at 10 to 12 days. The body size and condition of the downy plumage of young birds were used to discriminate among the first three age classes. At approximately 18 days of age the juvenile feathers are apparent on the wings. The progression of development of the wing, tail, scapular and head feathers allowed distinctions to be made between earlier and later age classes. Comparisons between ages were easier following the appearance of the juvenile feathers.



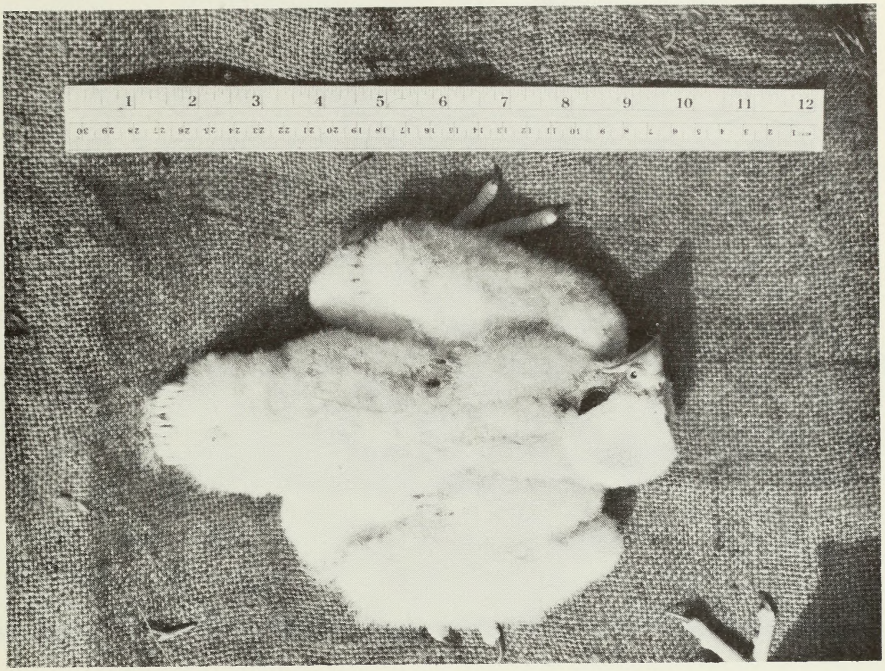

2 3 4 5 6 7 8 9 10 11

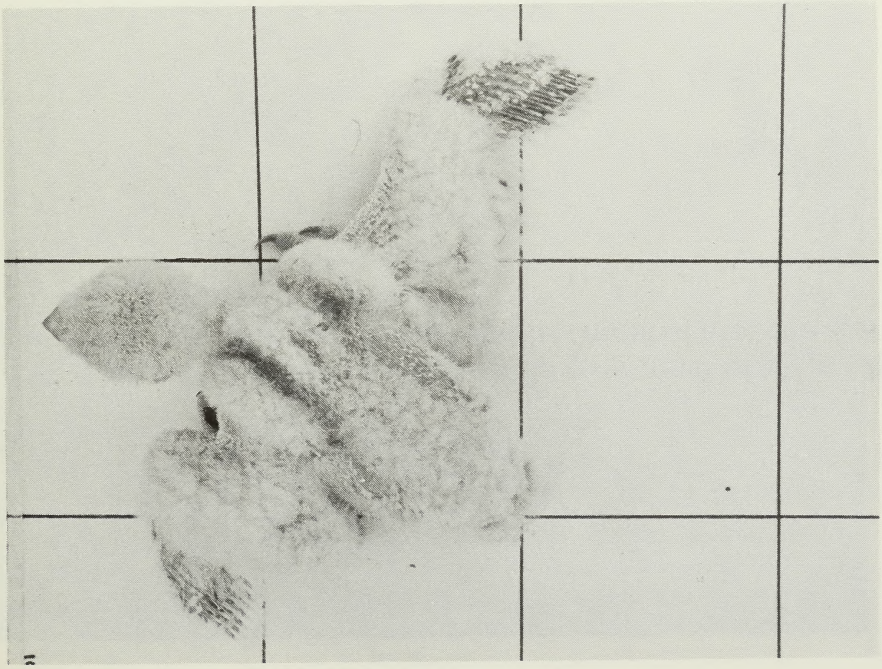
5-7 DAYS

The down is all white with pink skin visible over most of the body. The young are weak, prone and huddled together most of the time. Length is approximately 5 inches (13 cm).

9-11 DAYS

The down is white. Spinal apteria visible. Young are able to sit up and keep their heads up. Length is approximately 6 inches (15 cm).



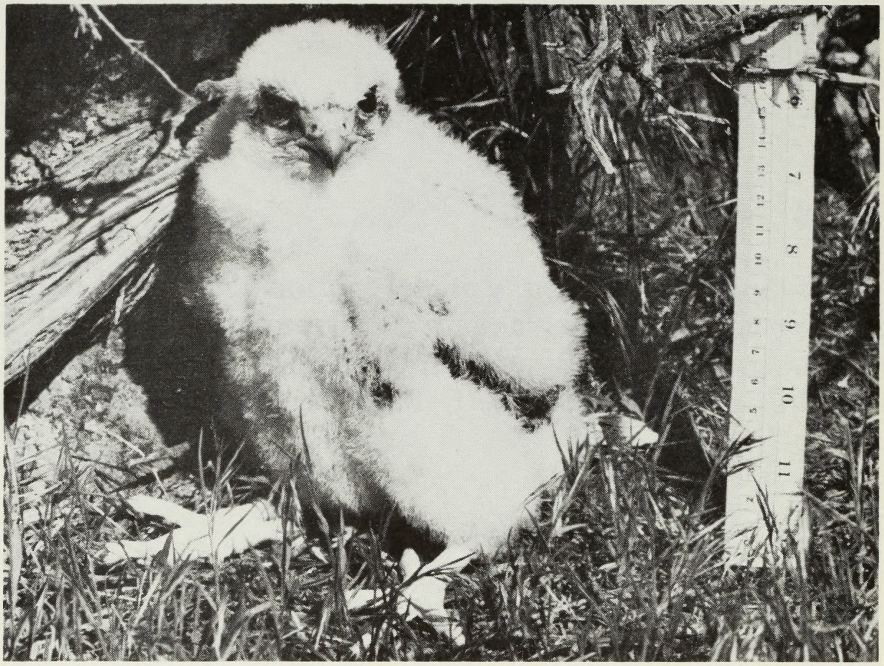


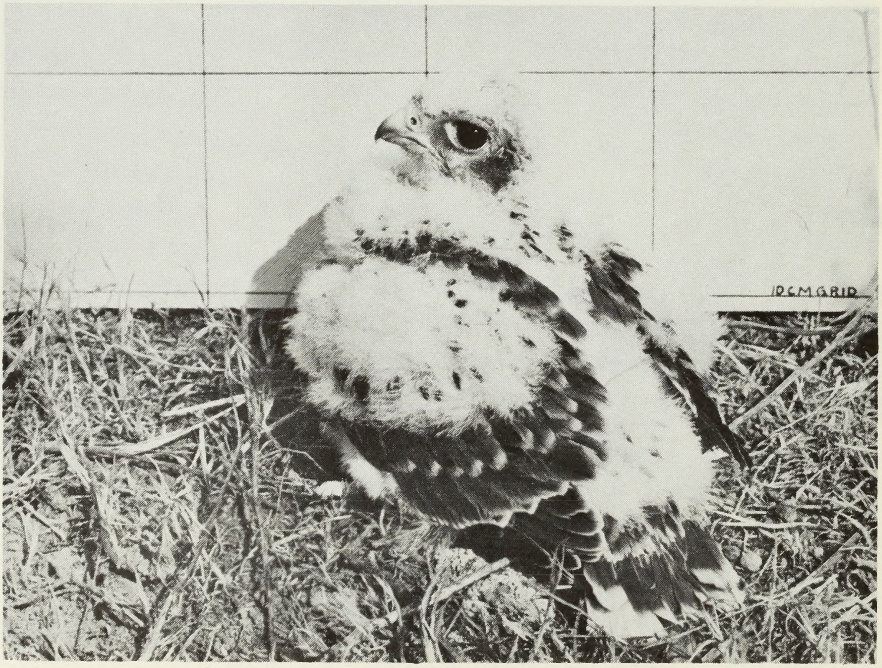
13-15 DAYS

Juvenile feather development is beginning to show on the wing. Dark gray primary and secondary sheath development is apparent. Spinal and humeral apteria are visible. Young are approximately 8 inches (20 cm) in length. Body down is white. Rectrices are in the natal down stage.

17-19 DAYS

Primaries and secondaries visible with the tips bursting through the sheaths. Down has covered the areas of bare skin. Juvenile scapular feathers are starting to show. Light tips of the retrices have burst from the sheaths. The young are approximately 9 inches (23 cm) in length.

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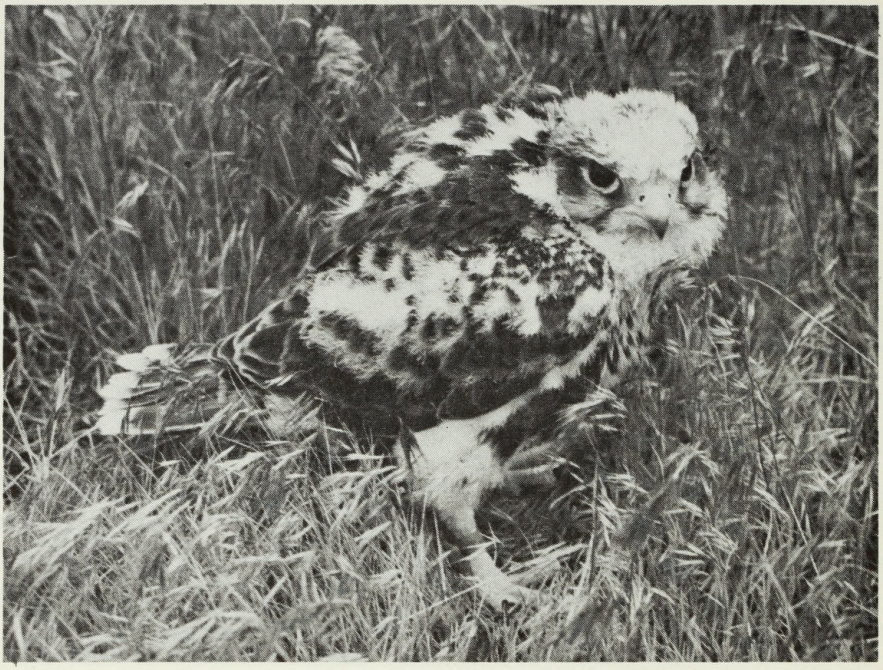
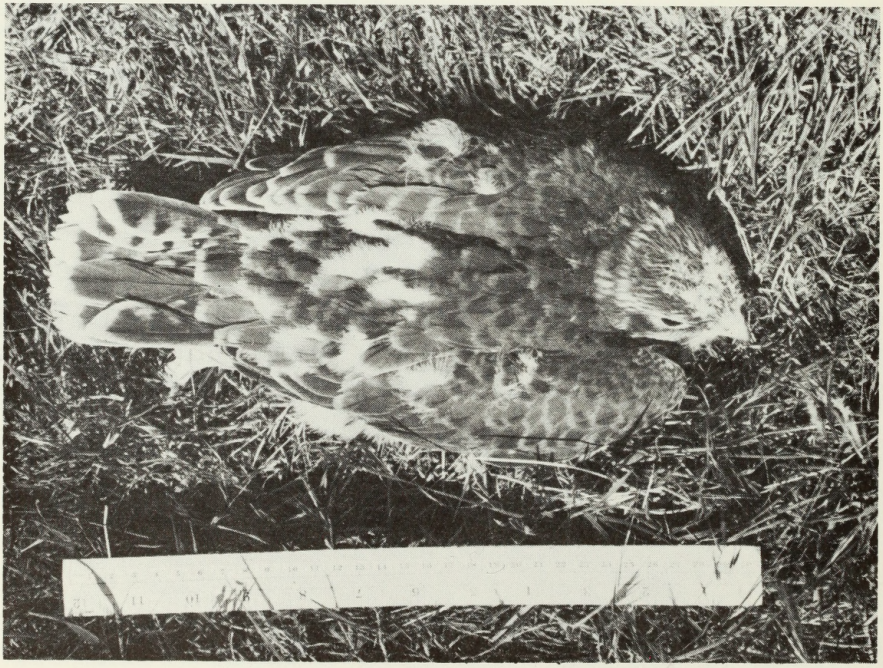
21-23 DAYS

Greater primary coverts are out of the sheaths and contrast with the white wing and body down. Light colored feathers in the superciliary and coronal regions are starting to show. The feathers in the auricular region are also showing. The rectrices have a 50/50 light-dark contrast. The scapulars are beginning to show along the back.

25-27 DAYS

The wings are 50% feathered and the scapulars are distinct. The upper tail coverts are through the down. Dark feathers around the eye (auricular and superciliary region) are very conspicuous. The breast area is still downy.





29-31 DAYS

The head is 50-75% feathered. Down is still showing in the region of the upper secondary coverts. The striped breast feathers are conspicuous.

33-35 DAYS

Head and back are 90-95% feathered. Dorsal wing is 90% feathered. Legs are 90% feathered.

LITERATURE CITED

Fyfe, R.W. and R.R. Olendorff. 1976. Minimizing the dangers of nesting studies to raptors and other sensitive species. Canadian Wildlife Service Occ. Paper #23.

Mayfield, H.F. 1961. Nesting success calculated from exposure. Wilson Bull. 73:255-261.

Mayfield, H.F. 1975. Suggestions for calculating nest success. Wilson Bull. 87:456-466.

Petersen, L.R., and D.R. Thompson. 1977. Aging nestling raptors by 4th primary measurements. J. Wildl. Manage. 41(3):587-590.

Scharf, W.C., and E. Balfour. 1971. Growth and development of nestling hen harriers. Ibis 111:323-329.

Springer, M.S. 1979. Growth analysis for aging: female great horned owls. Ohio J. Sci. 79(1):37.

Steenhof, K., and M.N. Kochert. 1982. An evaluation of methods used to estimate raptor nesting success. J. Wildl. Manage. 46(4):885-893.

GLOSSARY

Apteria[3] — Bare featherless areas between pterylae or feather tracts.

Auriculars[1] — Feathers covering the ear opening and the area immediately around it.

Coronal Region — The area on top of the head.

Coverts[1] — Small feathers that overlie or cover the bases of the large flight feathers of the wings and tail, or that cover an area or structure.

Juvenile Feathers — The sequence of flight feathers which replace the natal down.

Natal Down — First feathers to form on the young birds, replaced by the development of the juvenile feathers.

Occiput[2] — Posterior portion of the crown. Also known as the hind head.

Primaries[1] — The outermost and longest flight feathers on a bird's wing. Members of the Order Falconiformes have ten primaries.

Pterylae — Feather tracts, of which there are eight:

Capital: Feather tract of the head
Humeral: Feather tract of the upper arm
Alar: Primaries, Secondaries
Ventral: Feather tract of the belly from throat to breast
Spinal: Feather tract of the back from head to tail
Femoral: Feather tract of the thigh
Crural: Feather tract of the leg
Caudal: Tail feather tract

Retrices — Tail feathers.

Remiges[2] — Large feathers of the wing, the primaries and secondaries.

Scapulars[1] — A group of feathers on the shoulder, along the side of the back.

Secondaries[1] — Large flight feathers located in a series along the rear edge of the wing, immediately inward from the primaries.

Sheath — Keratin material which encases newly developed juvenile feathers. The sheath disintegrates and allows the feather to unfold.

Superciliary Region[2] — Area below the boundary of the forehead and the crown, the area above the eye.

[1]Udvardy, M.D.F. The Audubon Society Field Guide to North American Birds. New York: Alfred A. Knopf. 1977.

[2]Pettingill, O.S., Jr. Ornithology in Laboratory and Field, 4th ed. Minneapolis: Burgess Publ. Co. 1970.

[3]Welty, J.C. The Life of Birds. Philadelphia: W.B. Saunders Co. 1975.

NOTES:

NOTES:

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